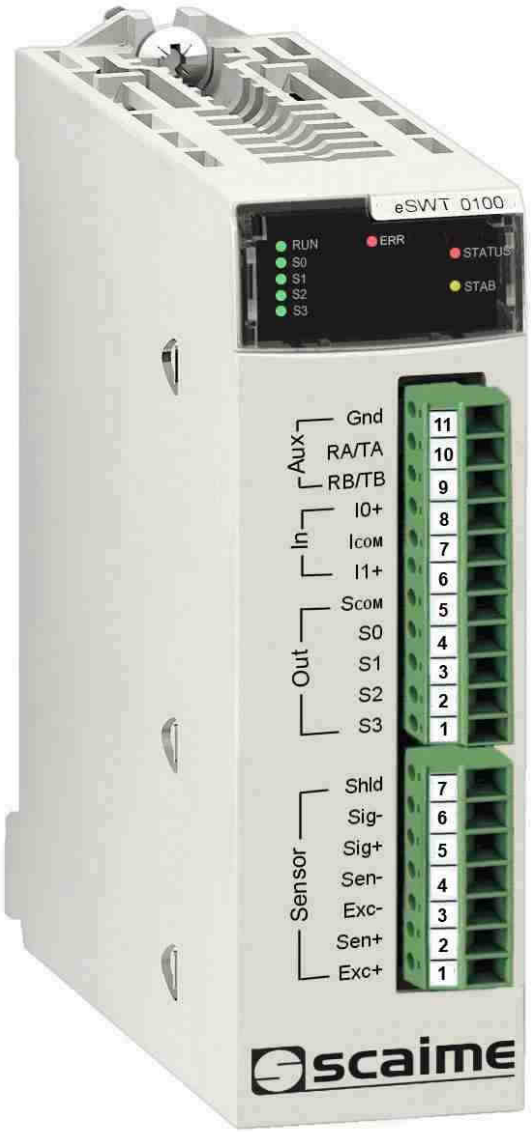
DFB User Manual

PME SWT 0100

Weighing module

For Schneider Electric MX80



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INTRODUCTION

This user manual describes the application settings with Unity function block (DFB) of the PME SWT, the weighing module controller for the M580 and X80 system, developed by SCAIME.

This manual follows the documents below:

- DTM user manual for device initial configuration
- Software user manual for device process configuration

You are advised to read these manuals first.

1 PMESWT DFB (DERIVED FUNCTION BLOCK)

1.1 Overview

Using the DFB function block, user does not care about complexity of CIP and PIP request/response. He needs to provide the IDs of device configuration to be accessed through read/write service.

For read or write parameter service, user must fill in the 2 following parameters in the function block:

- Number of configuration parameters to access
- The list of IDs on each preference parameter

In addition to easily configure the weighing module, the function block provides the following capabilities:

- Access to complete physical calibration sequence with error management
- Access to all measurements and status, explicit transaction status, logical input/output status and device status etc.
- Quick perform of the weighing functional commands such as tare, cancel tare, zero, dosing commands etc.

1.2 Environment compatibility

The following table lists the minimum software requirement for installation and use of PME SWT DFB:

Tools	Name	Version
Microsoft	Windows	7 pro 64bits
Schneider Electric	Unity Pro XL	V 8.1
Schneider Electric	Unity Pro PlantStruxure DTM Library	2.5.8
Schneider Electric	PME DTM Library	1.0.22
SCAIME	Weighing Application firmware	1.00.23

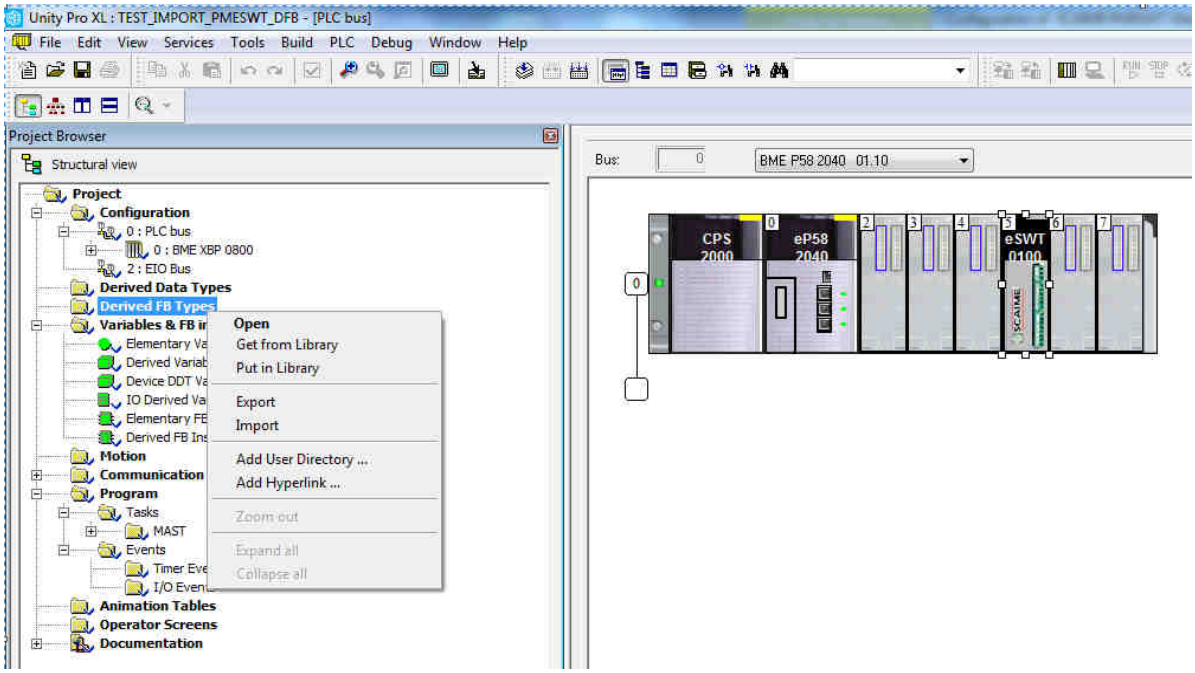
1.3 Using DFB in unity project

The weighing module function block can be used with current Unity project or in a new one.

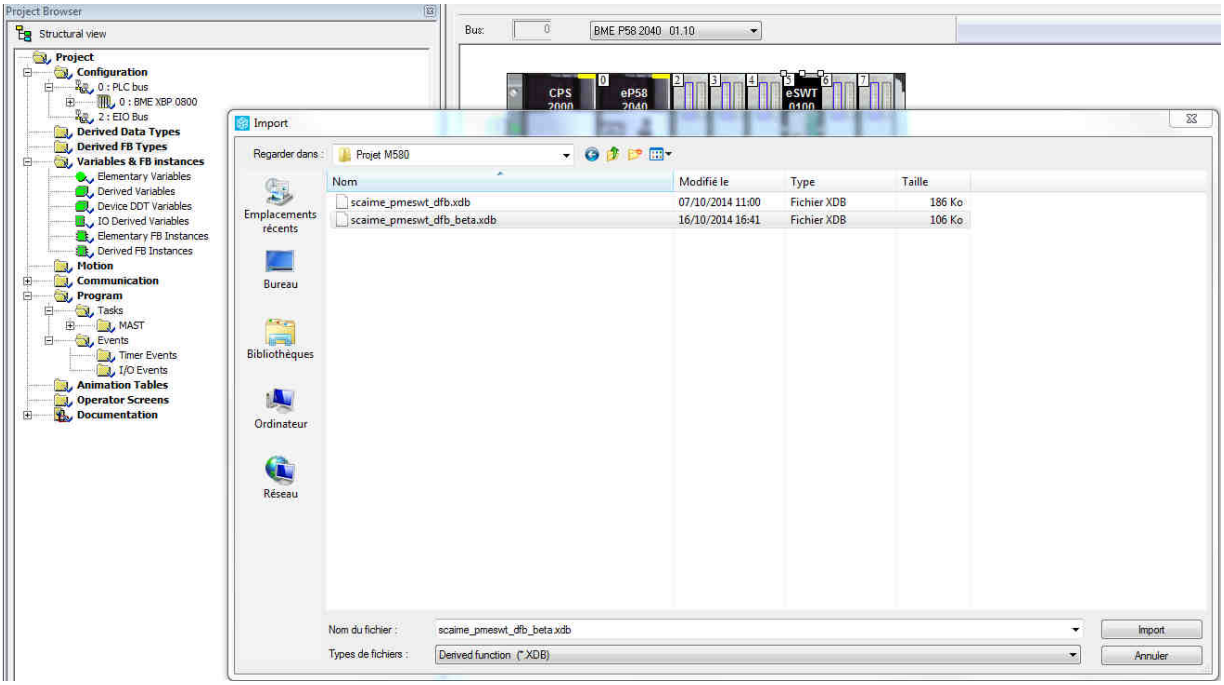
To use the function block on Unity environment, please check the minimum environment compatibility and follow the steps below:

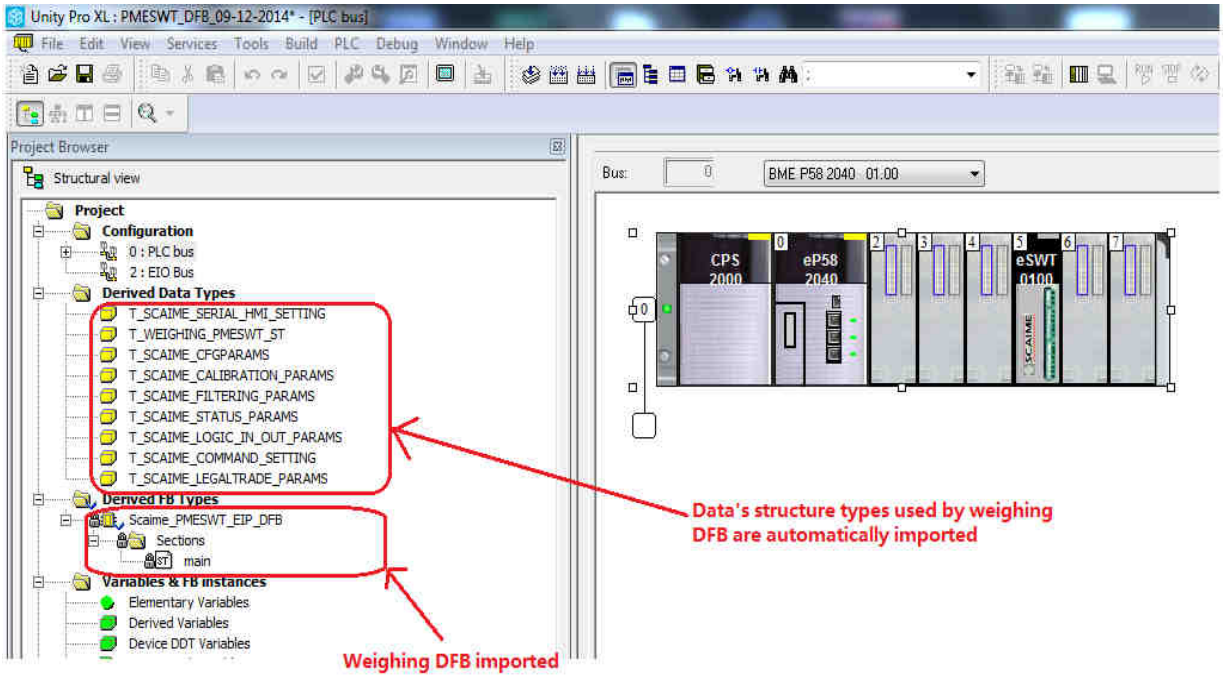
1.3.1 Import function block

Step #1: In Unity Project Browser menu, right click on Derived FB Types and select Import



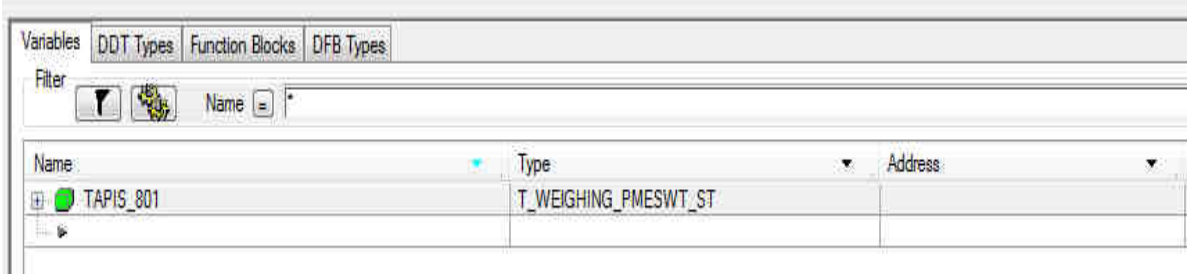
Step #2: Locate the weighing module DFB folder on your computer and import it





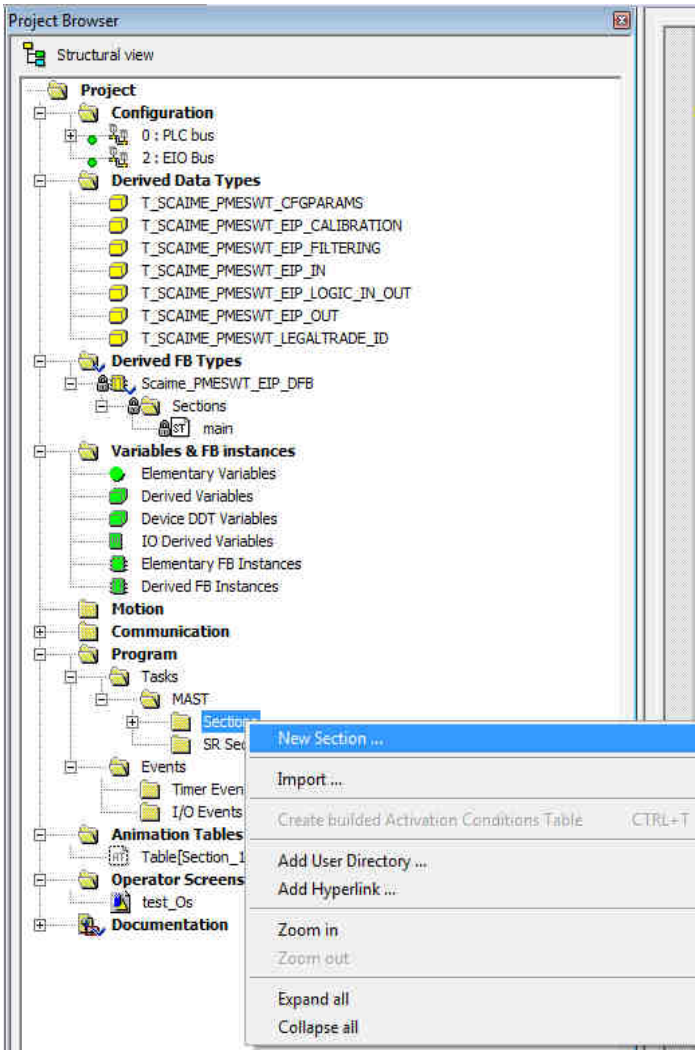
Step #3: Create 1 user variable (type of **T_WEIGHING_PMESWT_ST**):

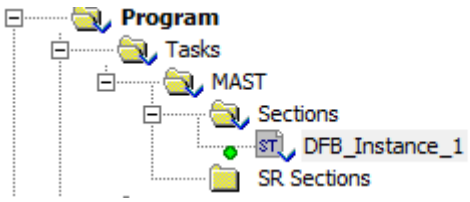
Example: I created user variable **TAPIS_801** (this name is related to my application)



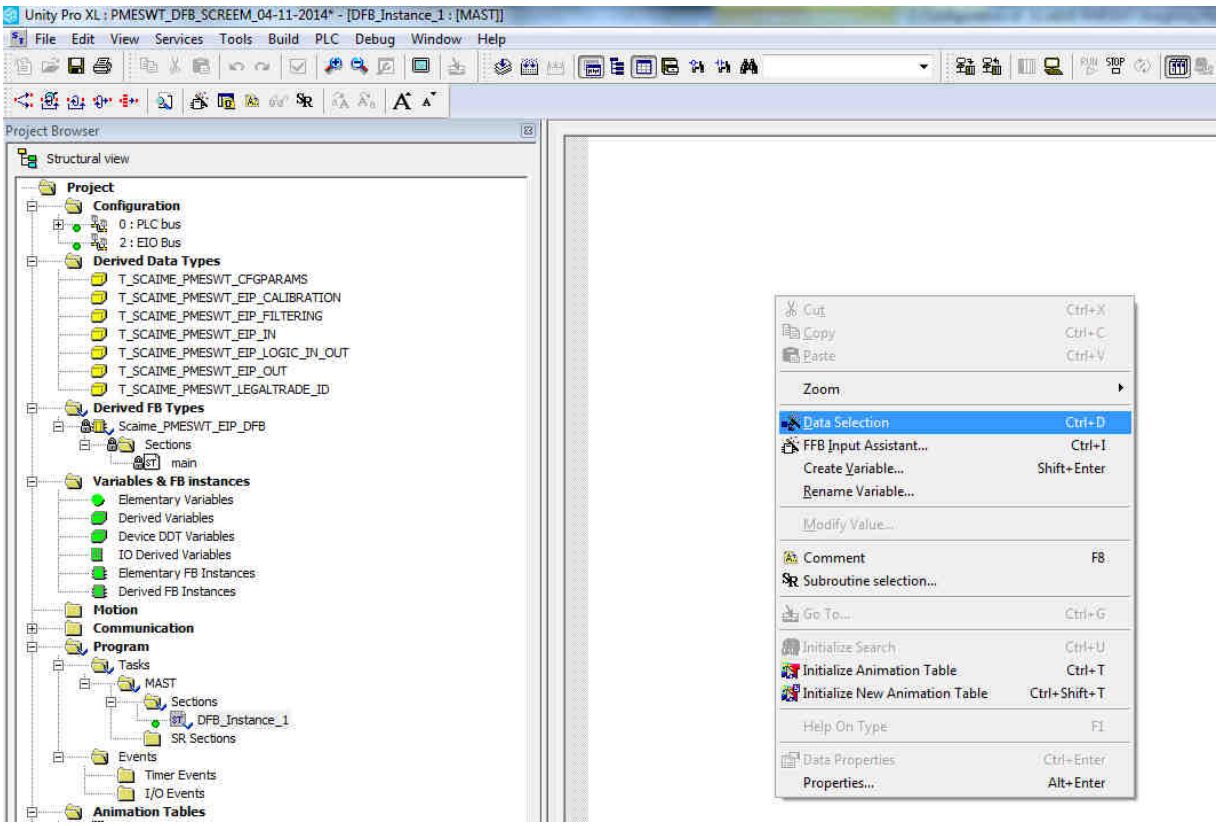
1.3.2 Calling the weighing module function block

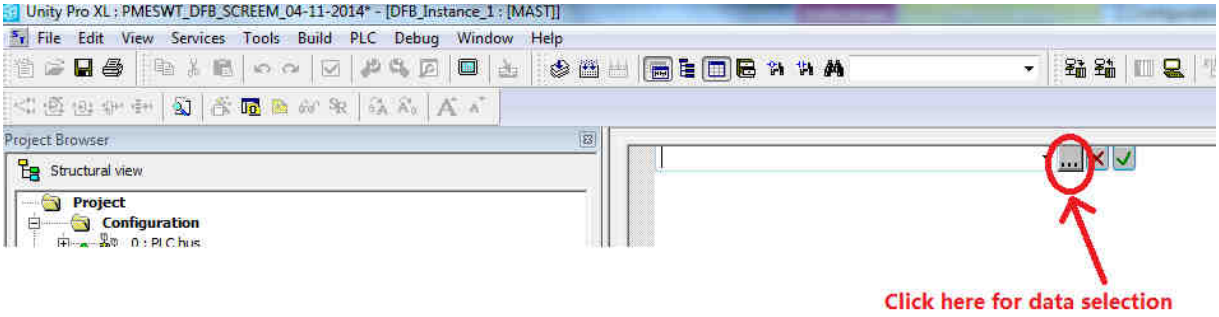
Step #1: Create new Task in Unity section menu

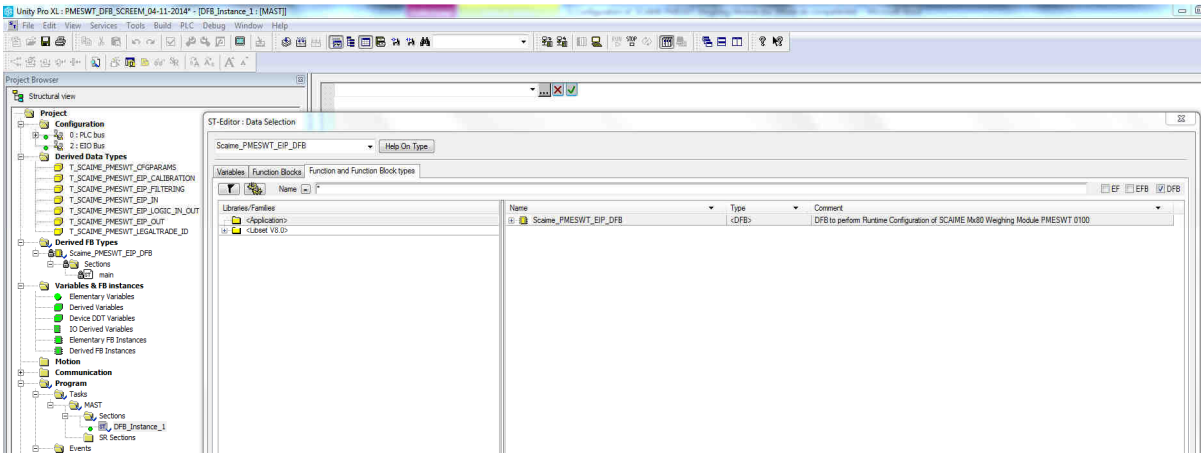




Step #2: Create new DFB instance (Right click on section created and selected Data Selection)

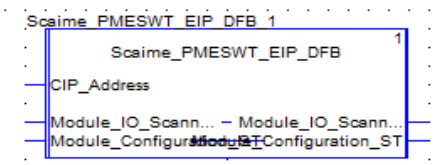



Unity Pro XL : PMESWT_DFB_SCREEM_04-11-2014* - [DFB_Instance_1 : [MAST]]
File Edit View Services Tools Build PLC Debug Window Help
Project Browser
Structural view
Project
Configuration
Click here for data selection

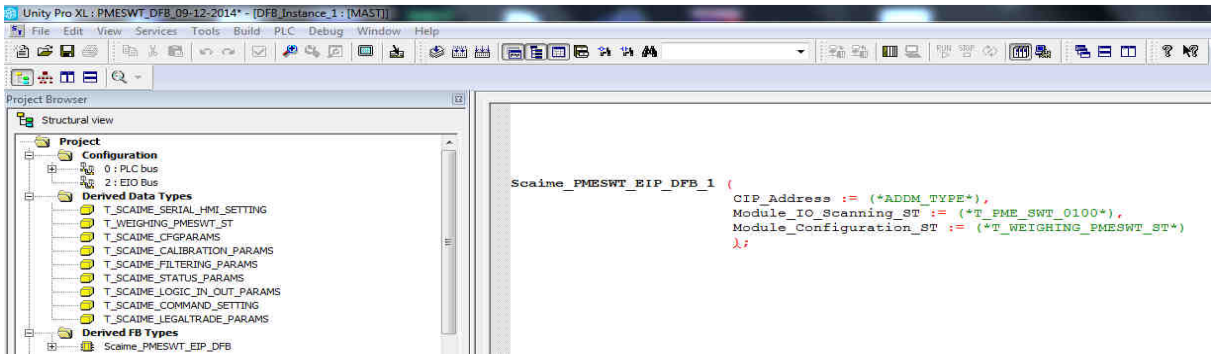


1.3.3 Weighing module DFB representation

NOTE
You are advised to use only one DFB instance per each plant weighing module.



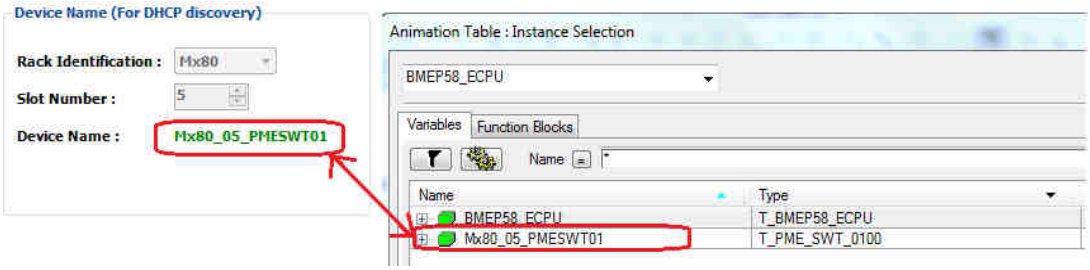
DFB instance in FBD language



DFB instance in ST language

With:

- **CIP_Address**: Use ADDM function (see on user manual software or Unity help)
- **Module_IO_Scanning_ST**: Device IO Variable name on master DTM (type **T_PME_SWT_0100**). To avoid confusion, you are advised to use the same name for “Device IO variable Name” and “Device name” on DTM.



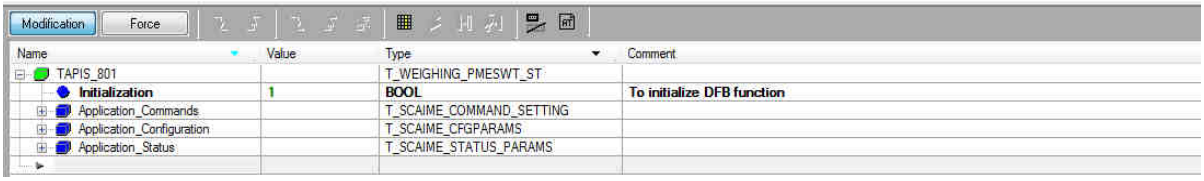
- **Module_Configuration_ST:** Type of **T_WEIGHING_PMESWT_ST** contains all application runtime data’s.

Example of using DFB instance in ST language:

```
Scaime_PMESWT_EIP_DFB_1 (
                        CIP_Address := (*ADDM_TYPE*)ADDM('0.0.3{192.168.2.55}UNC.CIP'),
                        Module_IO_Scanning_ST := (*T_PME_SWT_0100*)Mx80_05_PMESWT01,
                        Module_Configuration_ST := (*T_WEIGHING_PMESWT_ST*)TAPIS_801
                        );
```

With:

TAPIS_801 is user variable created in previous step (will content all application runtime data’s.)



- **Initialization:** entry for enable/disable weighing function block management (not Unity task!)
- **Application_Commands:** entry to perform device functional commands and explicit requests
- **Application_Configuration:** entry that user access (RW) to process configuration data
- **Application_Status:** entry that contains module process information (such as measurement data/status, logical input/output states, explicit transaction status etc)

Mx80_05_PMESWT01 is the IO structure name, named during master DTM configuration (Initial configuration)

- **Mx80** : Main rack identification
- **05** : Slot number identification
- **PMESWT01** : Module name

Note: Using DFB instance output parameters type is not mandatory

1.4 PMESWT Configuration parameter

The weighing module function block provides the list of configuration parameters used by end user to access parameters directly into/from device internal memory.

To read or write parameter service: User must fill in the 2 following parameters in the function block:

- Number of configuration parameters to access
- The list of IDs on each selected parameter (see configuration parameter table in software user manual)

Name	Value	Type	Comment
TAPIS_801		T_WEIGHING_PMESWT_ST	
Initialization	1	BOOL	To initialize DFB function
Application_Commands		T_SCAIME_COMMAND_SETTING	
Application_Configuration		T_SCAIME_CFGPARAMS	
SWTouch		T_SCAIME_SERIAL_HMI_SETTING	
Serial_HMI_Address	0	BYTE	Parameter ID: 1000 Access : R/W
Serial_HMI_Baudrate	0	UDINT	Parameter ID: 1001 Access : R/W (Values supported : 9600, 19200, 38400)
SWTouch_HMI_Params	0	WORD	Parameter ID: 1002 Access : R/W (see in device user manual/help file for bit fields details)
SWTouch_HMI_PassWord	''	string[4]	Parameter ID: 1003 Access : R/W
LegalFor_Trade		T_SCAIME_LEGALTRADE_PARAMS	
LegalForTrade_Sealing_Switchs	0	BYTE	Parameter ID: 1023 Access : R/W (see in device user manual/help file for bit fields details)
LegalForTrade_SW_Version	0	BYTE	Parameter ID: 1024 Access : RO
LegalForTrade_Counter	0	UINT	Parameter ID: 1025 Access : RO
LegalForTrade_CRC16	0	UINT	Parameter ID: 1026 Access : RO
Zero_functions	0	UINT	Parameter ID: 1027 Access : R/W (see in device user manual/help file for bit fields details)
Zero_Tare_Specified_Time_ms	0	UINT	Parameter ID: 1029 Access : R/W
Preset_Tare_Value	0	UDINT	Parameter ID: 1030 Access : R/W
Stability_Criterion	0	BYTE	Parameter ID: 1028 Access : R/W (see in device user manual/help file for bit fields details)
Decimal_Point_Position	0	BYTE	Parameter ID: 1034 Access : R/W (see in device user manual/help file for bit fields details)
Unit	''	string[4]	Parameter ID: 1032 Access : R/W
LoadCell_Terminal_Resistor	0	BYTE	Parameter ID: 1058 Access : R/W (see in device user manual/help file for bit fields details)
Calibration		T_SCAIME_CALIBRATION_PARAMS	
Maximum_Capacity	0	UDINT	Parameter ID: 1031 Access : R/W
Number_Of_Segments	0	UINT	Parameter ID: 1037 Access : R/W
Calibration_Load_1	0	UDINT	Parameter ID: 1038 Access : R/W
Calibration_Load_2	0	UDINT	Parameter ID: 1039 Access : R/W
Calibration_Load_3	0	UDINT	Parameter ID: 1040 Access : R/W
Sensor_Sensitivity	0.0	REAL	Parameter ID: 1035 Access : R/W
Sensor_Zero_Sensitivity	0.0	REAL	Parameter ID: 1036 Access : R/W
Scale_Interval	0	UINT	Parameter ID: 1033 Access : R/W
User_Calibration_Zero_Value	0	DINT	Parameter ID: 1041 Access : R/W
Coef_Span_adjustment_1	0.0	REAL	Parameter ID: 1043 Access : R/W
Coef_Span_adjustment_2	0.0	REAL	Parameter ID: 1044 Access : R/W
Coef_Span_adjustment_3	0.0	REAL	Parameter ID: 1045 Access : R/W
CoefGlobal_SpanAdjustment	0.0	REAL	Parameter ID: 1042 Access : R/W
Calibration_Place_G_Value	0.0	REAL	Parameter ID: 1046 Access : R/W
Using_Place_G_Value	0.0	REAL	Parameter ID: 1047 Access : R/W
Calibration_Restoring_status	0	BYTE	Parameter ID: 1060 Access : R/W
FDR_Calibration_Usage	0	BOOL	Parameter ID: 1061 Access : R/W
Filtering		T_SCAIME_FILTERING_PARAMS	
AD_Conversion_rate	0	UINT	Parameter ID: 1017 Access : R/W (see in device user manual/help file for bit fields details)
Low_Pass_Order	0	UINT	Parameter ID: 1018 Access : R/W (values supported 0 : filter disable, 2 : order 2 and 3 : order 3)
Low_Pass_CutOff_Frequency	0.0	REAL	Parameter ID: 1019 Access : R/W (values supported form 0.1Hz up to 200.0Hz)
Mean_Filter_Depth	0	UINT	Parameter ID: 1020 Access : R/W (values supported see in user manual/help file)
Flow_Rate_Depth	0	UINT	Parameter ID: 1021 Access : R/W (values supported see in user manual/help file)
Flow_Rate_Time_Unit	''	string[2]	Parameter ID: 1022 Access : R/W (values supported s : second, mn : minutes and h : hours)
Logical_Inputs_Outputs		T_SCAIME_LOGIC_IN_OUT_PARAMS	
Logical_Input_I0_Function	0	BYTE	Parameter ID: 1004 Access : R/W bit b0-b3 (input I0 function code) and bit b4 (input I0 logic)
Logical_Input_I1_Function	0	BYTE	Parameter ID: 1005 Access : R/W bit b0-b3 (input function code) and bit b4 (input I0 logic)
Inputs_Holding_Time_ms	0	UINT	Parameter ID: 1006 Access : R/W
Logical_Outputs_SOS1_Setting	0	WORD	Parameter ID: 1007 Access : R/W (see in device user manual/help file for bit fields details)

The weighing function block refresh all these configuration parameters, reading directly from device internal memory after DFB initialization step or when module switches to runtime state. To use this function, user must set the flag "Upload_Runtime_Config" in user variable structure **TAPIS_801**

Name	Value	Type	Comment
TAPIS_801		T_WEIGHING_PMESWT_ST	
Initialization	1	BOOL	To initialize DFB function
Application_Commands		T_SCAIME_COMMAND_SETTING	
Explicit_Command_Register_Code	0	WORD	Code sending to device command register field when using explicit request to perform functionals commands
Device_Reset	0	BOOL	To perform software reseting of weighing board (Warning : Device will lose its runtime configuration data if not ...
Tare	0	BOOL	Allow to set Net measurement to 0 (if stability reaching in 5s)
Cancel_Tare	0	BOOL	To cancel previous tare process effect
Preset_Tare	0	BOOL	Allow user to manually set previous tare value (with preset tare value parameter) if needed
Zero	0	BOOL	Allow to set both Net and Gross measurements to 0 (if stability reaching in 5s)
Tare_In_Specified_Time	0	BOOL	Allow to set Net measurement to 0 (even if not stability in specified time ms)
Zero_In_Specified_Time	0	BOOL	Allow to set both Net and Gross measurements to 0 (even if not stability in specified time ms)
Clearing_functional_registers	0	BOOL	Reset command and response register to 0 (means ready for next command)
Start_Dosing_Cycle	0	BOOL	Allow to start a new dosing cycle
Stop_Dosing_Cycle	0	BOOL	Allow to stop dosing cycle in progress
Start_Physical_Calibration	0	BOOL	To put the device into physical calibration mode
Calibration_Steps_Validation	0	BOOL	Allow user to validate calibration step with differents loads
Cancel_Current_Command	0	BOOL	Cancel and exit the current command execution (example: Exit calibration mode)
Saving_Calibration_in_flash	0	BOOL	If calibration sequences are successfully done this flag allows to save in device internal flash the user calibration
Saving_in_flash_memory	0	BOOL	Save all configuration in device internal flash memory
Restore_Factory_Settings	0	BOOL	Restore device configuration to factory setting
Upload_Runtime_Config	1	BOOL	Allow function block to load all configuration datas from device memory after initialization step
Execute_Explicit_Request	0	BOOL	Toggle to Send (on each rising edge) Explicit request to weighing module
Explicit_Request_Service	1	BOOL	Parameter access service (0 = Read and 1= Write)
Number_Of_Parameters	6	BYTE	Number of parameters requested (Read or Write) in explicit request (See parameters in user manual chapiter 7.2)
Configuration_Parameters_IDs		ARRAY[0..70] OF INT	Contents Parameters IDs list in explicit request (see parameter comment field or in user manual for ID)

If the flag "Upload_Runtime_Config" is set to false (0), user application must manually read all application configuration parameters after initialization step.

If the flag "Upload_Runtime_Config" is set to true (1), the function block will automatically read all configuration parameters after initialization step.

By default the flag "Upload_Runtime_Config" is set to false (0).

The following capture shows an example of configuration parameters read from device memory

Name	Value	Type	Comment
TAPIS_801		T_WEIGHING_PMESWT_ST	
Initialization	1	BOOL	To initialize DFB function
Application_Commands		T_SCAIME_COMMAND_SETTING	
Application_Configuration		T_SCAIME_CFGPARAMS	
SWTouch		T_SCAIME_SERIAL_HMI_SETTING	
Serial_HMI_Address	1	BYTE	Parameter ID: 1000 Access : R/W
Serial_HMI_Baudrate	9600	UDINT	Parameter ID: 1001 Access : R/W (Values supported : 9600, 19200, 38400)
SWTouch_HMI_Params	0	WORD	Parameter ID: 1002 Access : R/W (see in device user manual/help file for bit fields details)
SWTouch_HMI_PassWord	'5555'	string[4]	Parameter ID: 1003 Access : R/W
LegalFor_Trade		T_SCAIME_LEGALTRADE_PARAMS	
LegalForTrade_Sealing_Switchs	0	BYTE	Parameter ID: 1023 Access : R/W (see in device user manual/help file for bit fields details)
LegalForTrade_SW_Version	1	BYTE	Parameter ID: 1024 Access : RO
LegalForTrade_Counter	3	UINT	Parameter ID: 1025 Access : RO
LegalForTrade_CRC16	62557	UINT	Parameter ID: 1026 Access : RO
Zero_functions	0	UINT	Parameter ID: 1027 Access : R/W (see in device user manual/help file for bit fields details)
Zero_Tare_Specified_Time_ms	100	UINT	Parameter ID: 1029 Access : R/W
Preset_Tare_Value	0	UDINT	Parameter ID: 1030 Access : R/W
Stability_Criterion	3	BYTE	Parameter ID: 1028 Access : R/W (see in device user manual/help file for bit fields details)
Decimal_Point_Position	0	BYTE	Parameter ID: 1034 Access : R/W (see in device user manual/help file for bit fields details)
Unit	'kg '	string[4]	Parameter ID: 1032 Access : R/W
LoadCell_Terminal_Resistor	2	BYTE	Parameter ID: 1058 Access : R/W (see in device user manual/help file for bit fields details)
Calibration		T_SCAIME_CALIBRATION_PARAMS	
Maximum_Capacity	5000	UDINT	Parameter ID: 1031 Access : R/W
Number_Of_Segments	2	UINT	Parameter ID: 1037 Access : R/W
Calibration_Load_1	1000	UDINT	Parameter ID: 1038 Access : R/W
Calibration_Load_2	2000	UDINT	Parameter ID: 1039 Access : R/W
Calibration_Load_3	30000	UDINT	Parameter ID: 1040 Access : R/W
Sensor_Sensitivity	2.0	REAL	Parameter ID: 1035 Access : R/W
Sensor_Zero_Sensitivity	0.0	REAL	Parameter ID: 1036 Access : R/W
Scale_Interval	1	UINT	Parameter ID: 1033 Access : R/W
User_Calibration_Zero_Value	-62671	DINT	Parameter ID: 1041 Access : R/W
Coef_Span_adjustment_1	76.011	REAL	Parameter ID: 1043 Access : R/W
Coef_Span_adjustment_2	75.995	REAL	Parameter ID: 1044 Access : R/W
Coef_Span_adjustment_3	75.995	REAL	Parameter ID: 1045 Access : R/W
CoefGlobal_SpanAdjustment	1.0	REAL	Parameter ID: 1042 Access : R/W
Calibration_Place_G_Value	9.80547	REAL	Parameter ID: 1046 Access : R/W
Using_Place_G_Value	9.80547	REAL	Parameter ID: 1047 Access : R/W
Calibration_Restoring_status	6	BYTE	Parameter ID: 1060 Access : R/W
FDR_Calibration_Usage	1	BOOL	Parameter ID: 1061 Access : R/W
Filtering		T_SCAIME_FILTERING_PARAMS	
AD_Conversion_rate	16	UINT	Parameter ID: 1017 Access : R/W (see in device user manual/help file for bit fields details)
Low_Pass_Order	3	UINT	Parameter ID: 1018 Access : R/W (values supported 0 : filter disable, 2 : order 2 and 3 : order 3)
Low_Pass_CutOff_Frequency	5.0	REAL	Parameter ID: 1019 Access : R/W (values supported form 0.1Hz up to 200.0Hz)
Mean_Filter_Depth	0	UINT	Parameter ID: 1020 Access : R/W (values supported see in user manual/help file)
Flow_Rate_Depth	8	UINT	Parameter ID: 1021 Access : R/W (values supported see in user manual/help file)
Flow_Rate_Time_Unit	's'	string[2]	Parameter ID: 1022 Access : R/W (values supported s : second, mn : minutes and h : hours)
Logical_Inputs_Outputs		T_SCAIME_LOGIC_IN_OUT_PARAMS	
Logical_Input_I0_Function	17	BYTE	Parameter ID: 1004 Access : R/W bit b0-b3 (input I0 function code) and bit b4 (input I0 logic)
Logical_Input_I1_Function	18	BYTE	Parameter ID: 1005 Access : R/W bit b0-b3 (input function code) and bit b4 (input I0 logic)
Inputs_Holding_Time_ms	100	UINT	Parameter ID: 1006 Access : R/W
Logical_Outputs_SOS1_Setting	6	WORD	Parameter ID: 1007 Access : R/W (see in device user manual/help file for bit fields details)

1.5 Example of DFB used for Logical Input/output Runtime configuration

Step #1: Set your preference setting values on Input/output section

Name	Value	Type	Comment
TAPIS_801		T_WEIGHING_PMESWT_ST	
Initialization	1	BOOL	To initialize DFB function
Application_Commands		T_SCAIME_COMMAND_SETTING	
Application_Configuration		T_SCAIME_CFGPARAMS	
SWTouch		T_SCAIME_SERIAL_HMI_SETTING	
LegalFor_Trade		T_SCAIME_LEGALTRADE_PARAMS	
Calibration		T_SCAIME_CALIBRATION_PARAMS	
Filtering		T_SCAIME_FILTERING_PARAMS	
Logical_Inputs_Outputs		T_SCAIME_LOGIC_IN_OUT_PARAMS	
Input_I0_Settings	16#10	BYTE	Parameter ID: 1004 Access : R/W bit b0-b3 (input I0 function code) and bit b4 (input I0 logic)
Input_I1_Settings	16#10	BYTE	Parameter ID: 1005 Access : R/W bit b0-b3 (input I1 function code) and bit b4 (input I1 logic)
Inputs_Holding_Time_ms	500	UINT	Parameter ID: 1006 Access : R/W
Outputs_S0S1_Settings	16#0007	WORD	Parameter ID: 1007 Access : R/W (see in device user manual/help file for bit fields details)
Coarse_Feed_CutOff_Point	1000	DINT	Parameter ID: 1008 Access : R/W
Fine_Feed_CutOff_Point	1500	DINT	Parameter ID: 1009 Access : R/W
Fine_Feed_Mask_Time_ms	200	UINT	Parameter ID: 1010 Access : R/W
Output_S2_Setting	16#03	BYTE	Parameter ID: 1011 Access : R/W (see in device user manual/help file for bit fields details)
S2_Set_Point_Low_Value	2000	DINT	Parameter ID: 1012 Access : R/W
S2_Set_Point_High_Value	3000	DINT	Parameter ID: 1013 Access : R/W
Output_S3_Setting	16#03	BYTE	Parameter ID: 1014 Access : R/W (see in device user manual/help file for bit fields details)
S3_Set_Point_Low_Value	3000	DINT	Parameter ID: 1015 Access : R/W
S3_Set_Point_High_Value	4000	DINT	Parameter ID: 1016 Access : R/W
Ignored_DTM_Configuration	1	BOOL	Parameter ID: 1061 Access : R/W (bit b1) if bit is set to true, at power up device will keep user runtime configuration if saved in flash memory
Application_Status		T_SCAIME_STATUS_PARAMS	

Step #2: Define configuration parameters IDs you want to access (see IDs list in comments fields or in software user manual/help file), explicit service type (Read or Write) and number of IDs.

Name	Value	Type	Comment
TAPIS_801		T_WEIGHING_PMESWT_ST	
Initialization	1	BOOL	To initialize DFB function
Application_Commands		T_SCAIME_COMMAND_SETTING	
Explicit_Command_Register_Code	0	WORD	Code sending to device command register field when using explicit request to perform functionals commands
Device_Reset	0	BOOL	To perform software reseting of weighing board (Warning : Device will lose its runtime configuration data if not
Tare	0	BOOL	Allow to set Net measurement to 0 (if stability reaching in 5s)
Cancel_Tare	0	BOOL	To cancel previous tare process effect
Preset_Tare	0	BOOL	Allow user to manually set previous tare value (with preset tare value parameter) if needed
Zero	0	BOOL	Allow to set both Net and Gross measurements to 0 (if stability reaching in 5s)
Tare_In_Specified_Time	0	BOOL	Allow to set Net measurement to 0 (even if not stability in specified time ms)
Zero_In_Specified_Time	0	BOOL	Allow to set both Net and Gross measurements to 0 (even if not stability in specified time ms)
Clearing_functional_registers	0	BOOL	Reset command and response register to 0 (means ready for next command)
Start_Dosing_Cycle	0	BOOL	Allow to start a new dosing cycle
Stop_Dosing_Cycle	0	BOOL	Allow to stop dosing cycle in progress
Start_Physical_Calibration	0	BOOL	To put the device into physical calibration mode
Calibration_Steps_Validation	0	BOOL	Allow user to validate calibration step with differents loads
Cancel_Current_Command	0	BOOL	Cancel and exit the current command execution (example: Exit calibration mode)
Saving_Calibration_in_flash	0	BOOL	If calibration sequences are successfully done this flag allows to save in device internal flash the user calibrati
Saving_in_flash_memory	0	BOOL	Save all configuration in device internal flash memory
Restore_Factory_Settings	0	BOOL	Restore device configuration to factory setting
Upload_Runtime_Config	1	BOOL	Allow function block to load all configuration datas from device memory after initialization step
Execute_Explicit_Request	0	BOOL	Toggle to Send (on each rising edge) Explicit request to weighing module
Explicit_Request_Service	1	BOOL	Parameter access service (0 = Read and 1= Write)
Number_Of_Parameters	13	BYTE	Number of parameters requested (Read or Write) in explicit request (See parameters in user manual chapiter 7.2
Configuration_Parameters_IDs		ARRAY[0..70] OF INT	Contents Parameters IDs list in explicit request (see parameter comment field or in user manual for ID)
Configuration_Parameters_IDs[0]	1004	INT	
Configuration_Parameters_IDs[1]	1005	INT	
Configuration_Parameters_IDs[2]	1006	INT	
Configuration_Parameters_IDs[3]	1007	INT	
Configuration_Parameters_IDs[4]	1008	INT	
Configuration_Parameters_IDs[5]	1009	INT	
Configuration_Parameters_IDs[6]	1010	INT	
Configuration_Parameters_IDs[7]	1011	INT	
Configuration_Parameters_IDs[8]	1012	INT	
Configuration_Parameters_IDs[9]	1013	INT	
Configuration_Parameters_IDs[10]	1014	INT	
Configuration_Parameters_IDs[11]	1015	INT	
Configuration_Parameters_IDs[12]	1016	INT	
Configuration_Parameters_IDs[13]	0	INT	
Configuration_Parameters_IDs[14]	0	INT	

Explicit write access and Number of parameters

Logical Input/Output parameters IDs list

Step #3: Send explicit message to the module and check the transaction status.

Name	Value	Type	Comment
Upload_Runtime_Config	1	BOOL	Allow function block to load all configuration datas from device memory after initialization step
Execute_Explicit_Request	1	BOOL	Toggle to Send (on each rising edge) Explicit request to weighing module
Explicit_Request_Service	1	BOOL	Parameter access service (0 = Read and 1= Write)
Number_Of_Parameters	13	BYTE	Number of parameters requested (Read or Write) in explicit request (See parameters in user manual chapiter 7.2)
Configuration_Parameters_IDs		ARRAY[0..70] OF INT	Contents Parameters IDs list in explicit request (see parameter comment field or in user manual for ID)
Application_Configuration		T_SCAIME_CFGPARAMS	
Application_Status		T_SCAIME_STATUS_PARAMS	
Dfb_Initialization_Done	1	BOOL	
Module_RUN_State	1	BOOL	
Explicit_Cde_Register_RetCode	209	UINT	Parameter ID: 1056 Access : R/W (values supported functionals commands list : see in user manual/help file)
Implicit_Response_Register	2	UINT	Parameter ID: 1057 Access : RO (values supported 0 : IDLE, 1 : Command in progress, 2 : Command complet on suc...
Gross_Measurement	1999	DINT	
Net_Measurement	1999	DINT	
Tare_Value	0	DINT	
Flow_Rate_Value	0.0	REAL	
Factory_Measurement	89336	DINT	
Stability_flag	1	BOOL	
Measurement_Ok	1	BOOL	
Tare_Process_flag	0	BOOL	
ZeroTare_Process_flag	0	BOOL	
Preset_Tare_Process_flag	0	BOOL	
Flash_Memory_Status	0	BOOL	
Input_I0_State	0	BOOL	
Input_I1_State	0	BOOL	
Output_S0_State	0	BOOL	
Output_S1_State	0	BOOL	
Output_S2_State	0	BOOL	
Output_S3_State	0	BOOL	
Dosing_Cycle_Status	0	BOOL	
Calibration_Done_Status	1	BOOL	
Calibration_Sequence_Code	10	BYTE	
Calibration_Sequence_dfb_Message	'Save Calibration'	string[40]	
Calibration_Error_Status	0	BOOL	
App_Firmware_Version	10023	UINT	
Legal_ForTrade_Counter	3	UINT	
Legal_ForTrade_Checksum	62557	UINT	
Explicit_Request_Done	1	BOOL	
Data_Exch_Error	0	BOOL	
Explicit_Error_Request	0	BOOL	
Explicit_Error_Sys	0	BOOL	
Explicit_Error_Cip	0	BOOL	
Data_Exch_Com_Report	0	BYTE	
Data_Exch_Operation_Report	0	BYTE	

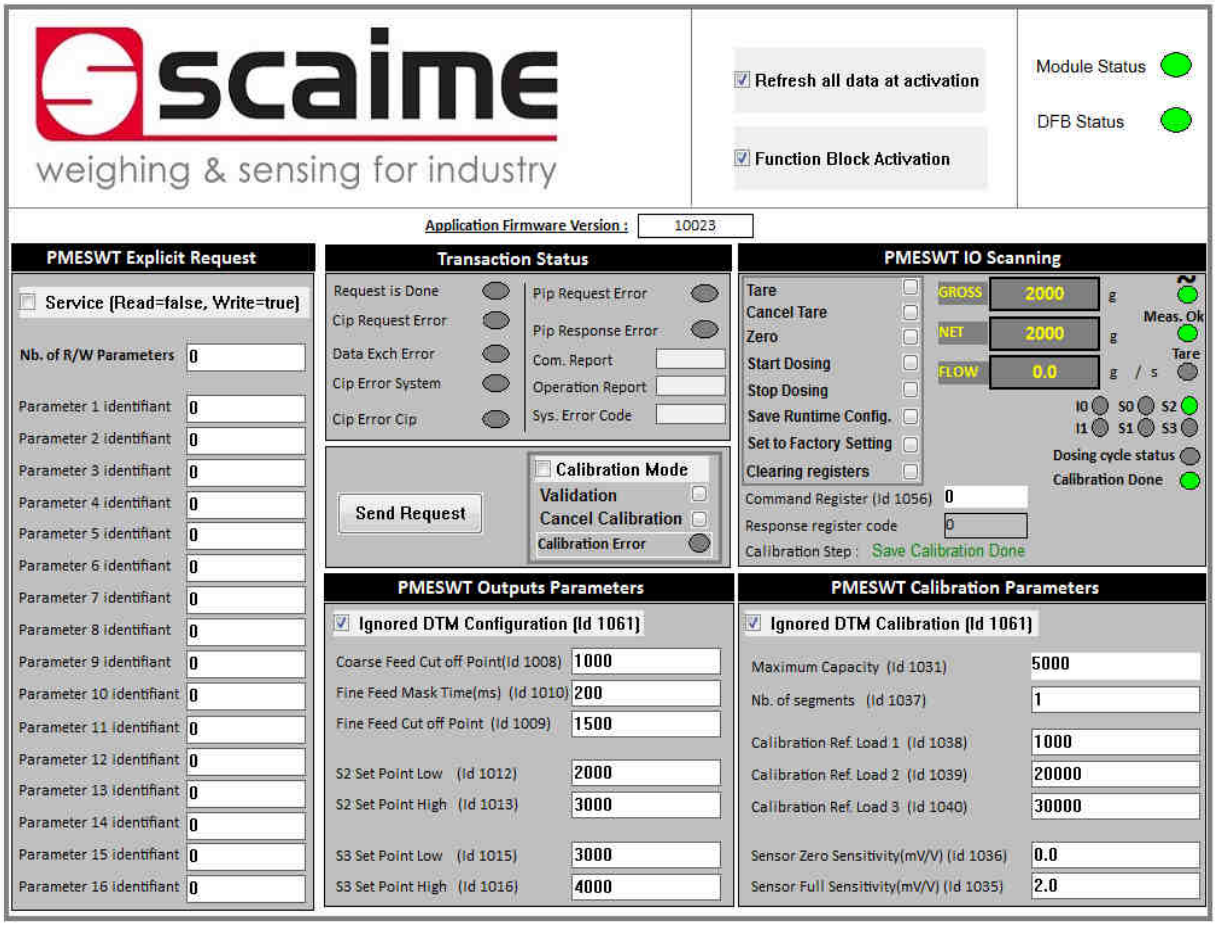
Execute explicit request flag

Status on explicit transaction

2 UNITY OPERATOR SCREEN ON PMESWT DFB

2.1 Operator screen presentation

This operator screen helps end user to understand all the DFB functionalities. It eases the development of user applications for the PME SWT.



The main parts of operator screen are:

2.1.1 Embedded Weighing Firmware Version

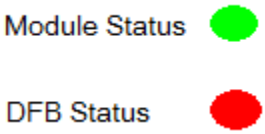
SCAIME weighing application firmware version (**v 1.00.23** on this example)

2.1.2 Upload Configuration Parameters from Device

This checkbox allows function block to read all configuration data from device internal memory at power up or after each initialization step.

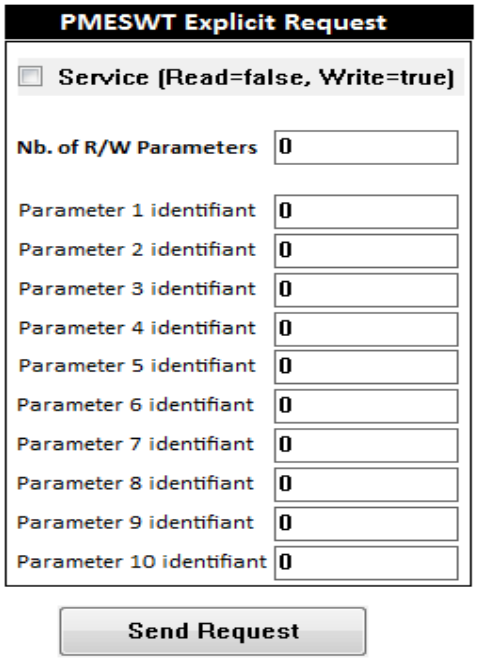
2.1.3 PME SWT DFB Activation

This checkbox enable or disable the function block management.



- PMESWT device status, Green = RUN STATE and Red = Error or Unity task in STOP
- Function block status, Green = ENABLE and Red = DISABLE

2.1.4 Perform explicit request

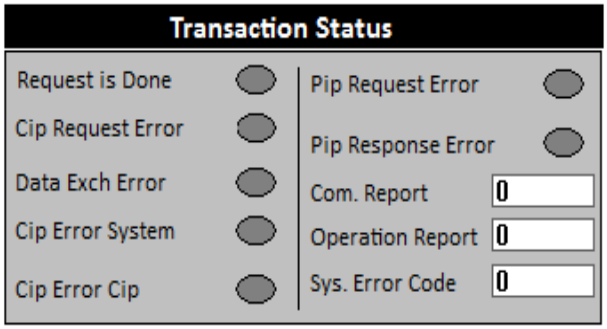


To replace module runtime configuration, user must send explicit requests to device.

Explicit request is composed of 3 parameters:

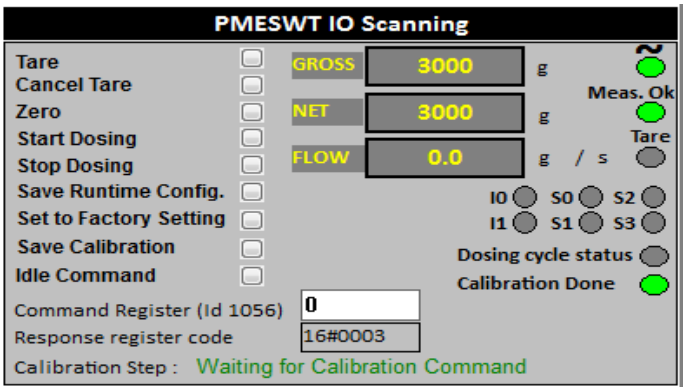
- **Service type :** define parameter access type, read (from device memory) or write(into device memory)
- **Nb. Of parameters :** define how many parameters (ID) will be affected by the request
- **Parameter (x) identifiers :** define the ID of parameters addressed by the request

2.1.5 Explicit transaction status



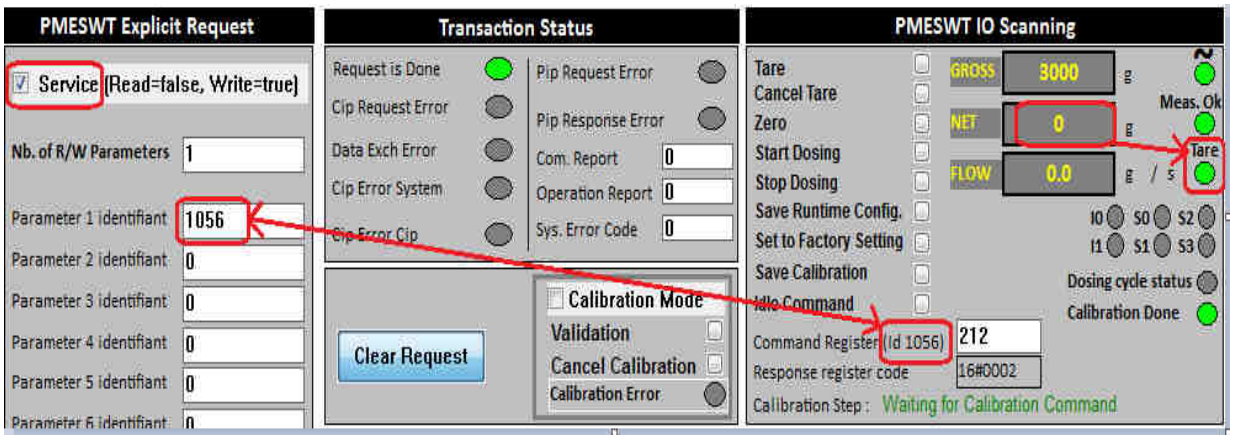
Click on Send Request button will send one explicit request to the module and reports the transaction status on this menu.

2.1.6 Functional command/response and IO Scanning



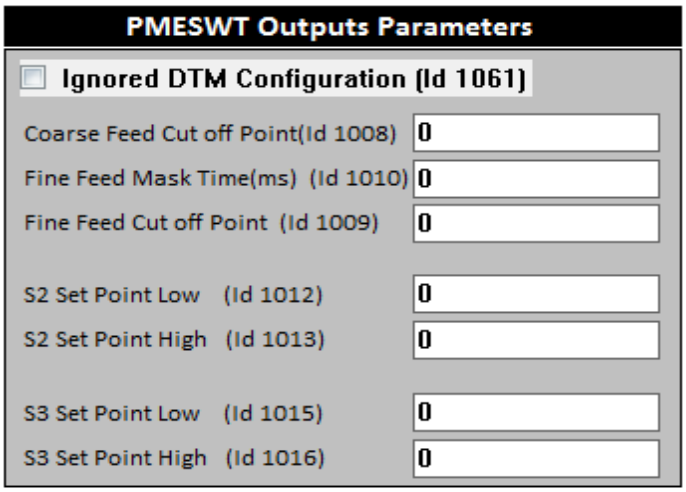
This section is used to send weighing functional commands to the module. Functional commands are sent through implicit or explicit type.

- **Implicit type:** command code is sent to the device when the user click on one command button (Example: Tare button)
- **Explicit type:** command code (in Command Register parameter, ID 1056) is sent to the device when the user prepare explicit request and click on "Send Request" button (figure below shows an example of tare command through explicit way).



The tare function command code is decimal 212 (see in software user manual for functional commands list supported).

2.1.7 Logical Output Parameters


PMESWT Outputs Parameters
Ignored DTM Configuration (Id 1061)
Coarse Feed Cut off Point(Id 1008) 0
Fine Feed Mask Time(ms) (Id 1010) 0
Fine Feed Cut off Point (Id 1009) 0
S2 Set Point Low (Id 1012) 0
S2 Set Point High (Id 1013) 0
S3 Set Point Low (Id 1015) 0
S3 Set Point High (Id 1016) 0

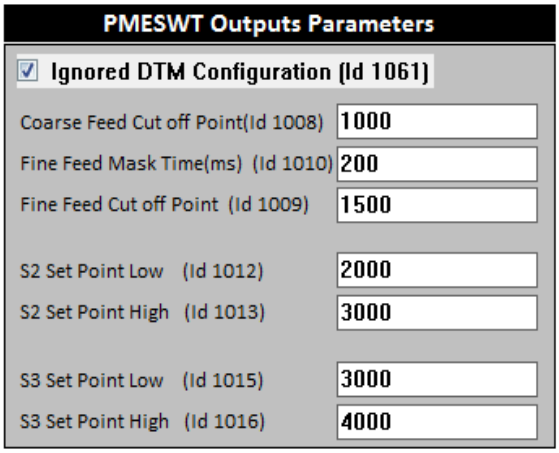
This section contains application process variables such as dosing feeds targets and set point values for output functions.

Ignored DTM Configuration (Id 1061)

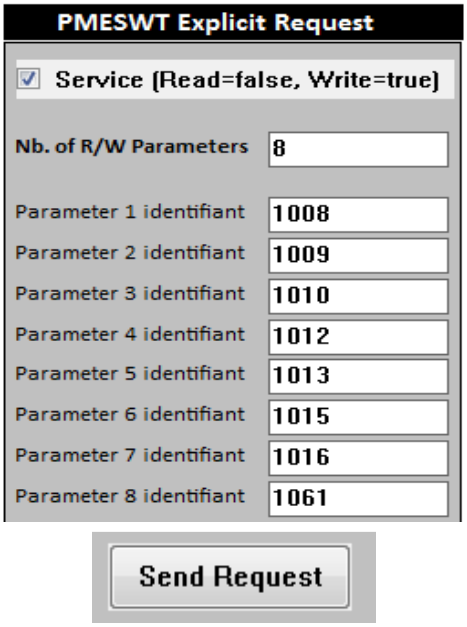
User can disable Initial configuration overwriting at power-up. It allows the module to keep parameters saved in flash memory and ignore DTM initial configuration from PLC.

To configure output parameters, follow these sequences:

1- Change outputs parameter(s) value(s)


PMESWT Outputs Parameters
Ignored DTM Configuration (Id 1061)
Coarse Feed Cut off Point(Id 1008) 1000
Fine Feed Mask Time(ms) (Id 1010) 200
Fine Feed Cut off Point (Id 1009) 1500
S2 Set Point Low (Id 1012) 2000
S2 Set Point High (Id 1013) 3000
S3 Set Point Low (Id 1015) 3000
S3 Set Point High (Id 1016) 4000

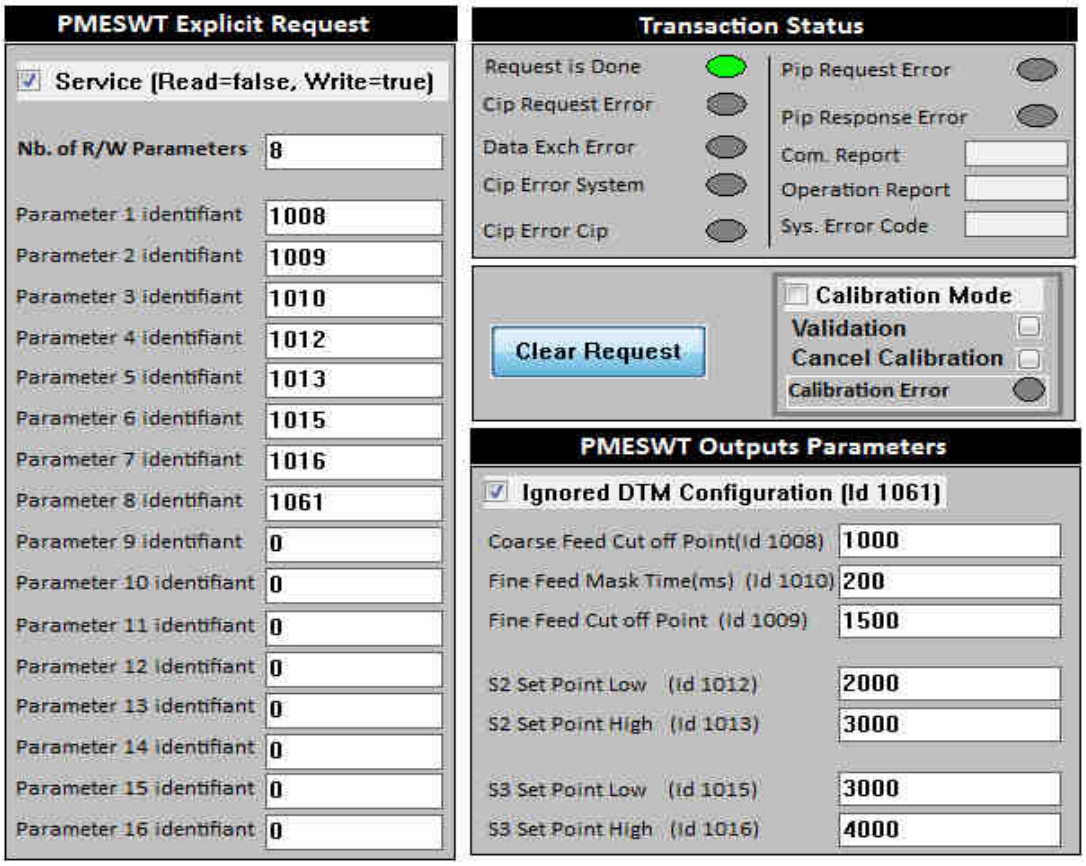
***2*- Prepare explicit request and click on "Send Request" button**



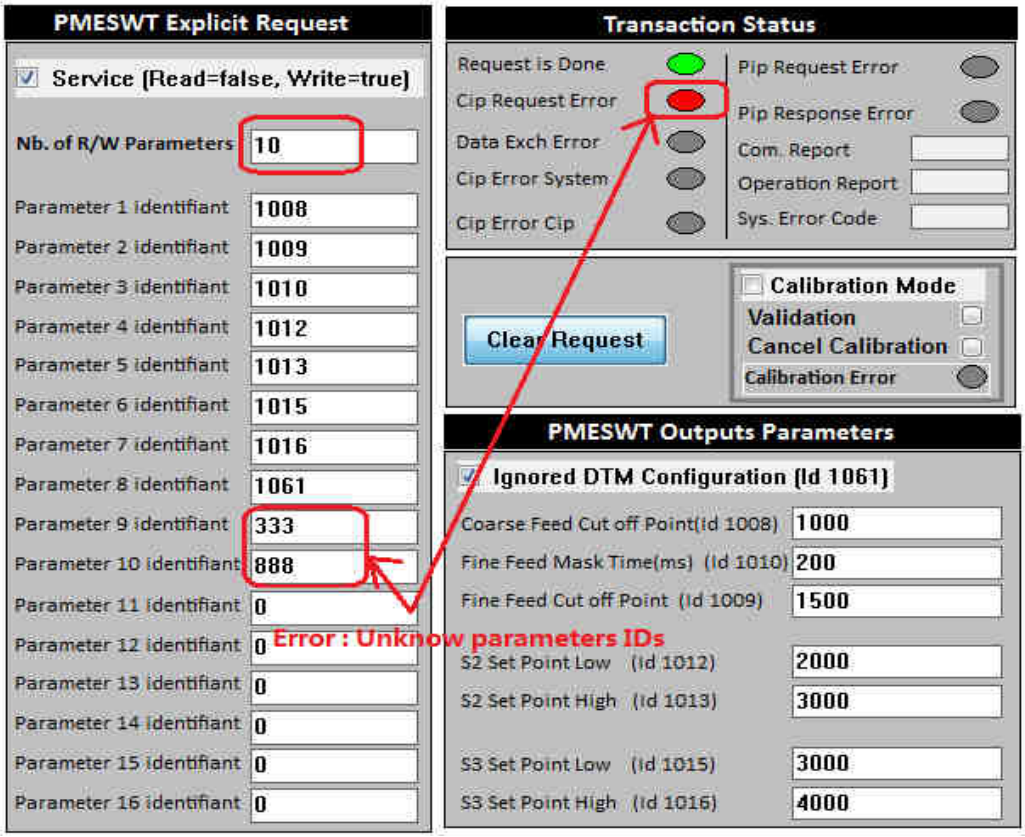
Note: You can send one explicit request to configure only one parameter (in that case Nb. Of R/W Parameters = 1 and Parameter 1 identifier = Selected ID)

3- Check transaction status

- The following capture shows status with no error (**request is Done**)



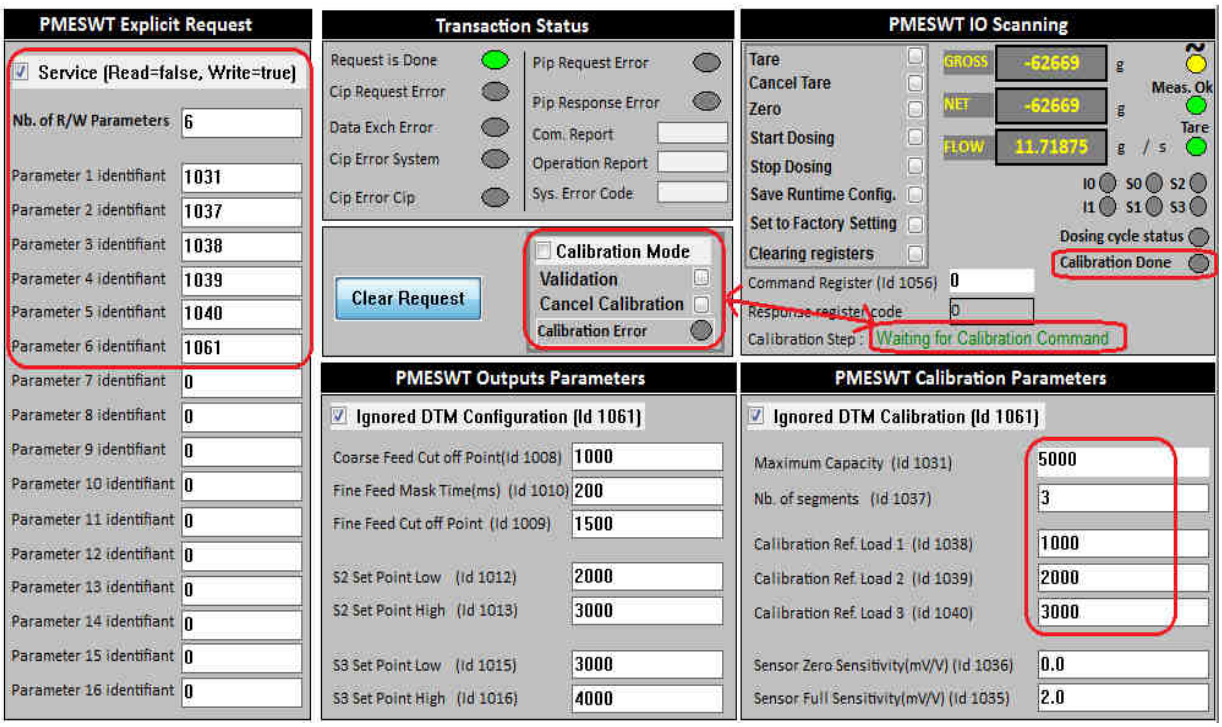
- The following capture shows status with error (**CIP request error**)



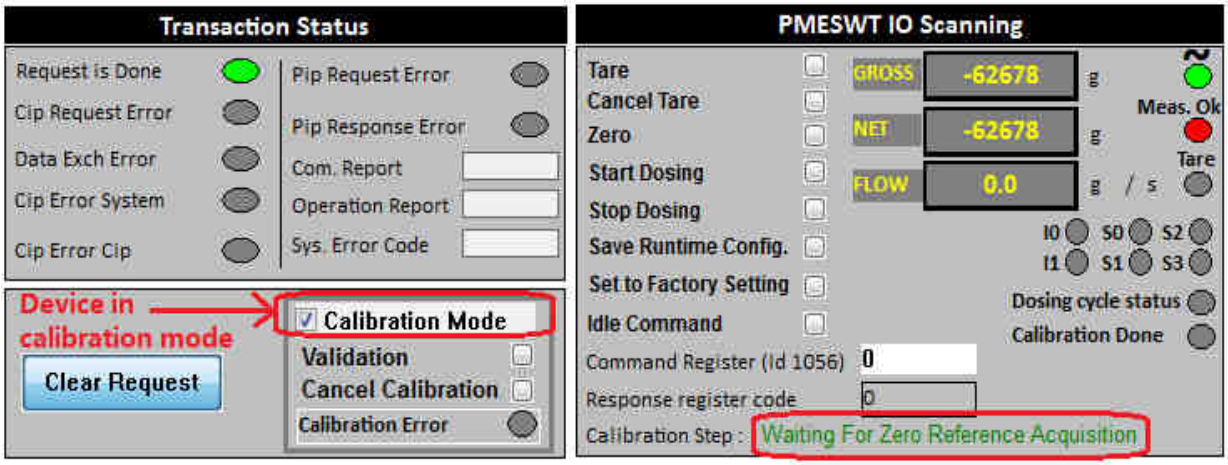
Note: Calibration parameters can be change as above. If you want to calibrate your device, you must follow calibration steps (see below).

2.2 Runtime physical calibration example with 3 reference loads

Step #1 – Calibration configuration

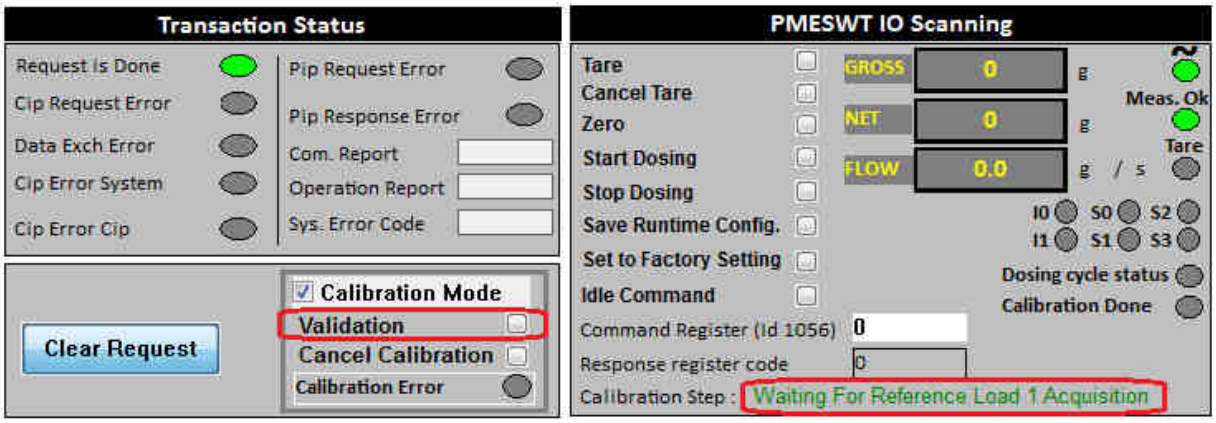


Step #2 - Put device in calibration mode



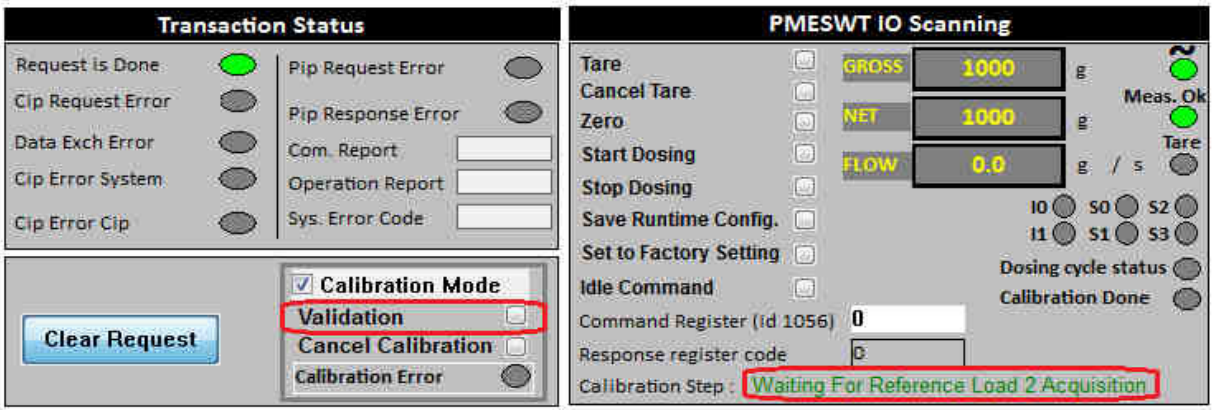
Step #3 – Perform Zero Acquisition

Click on "Validation" button when there is dead load on the scale.



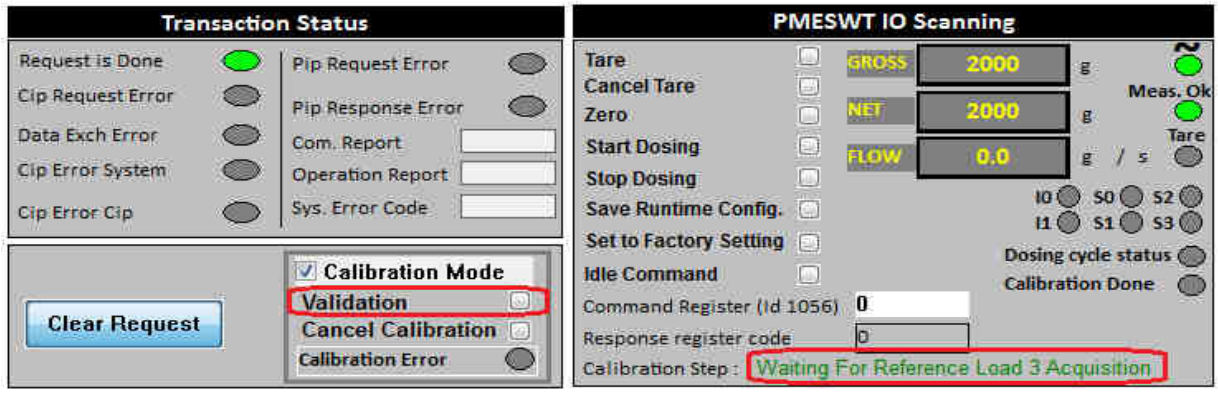
Step #4 – Perform Calibration Load 1 Acquisition

Click on “Validation” button when calibration load 1 is on the scale.



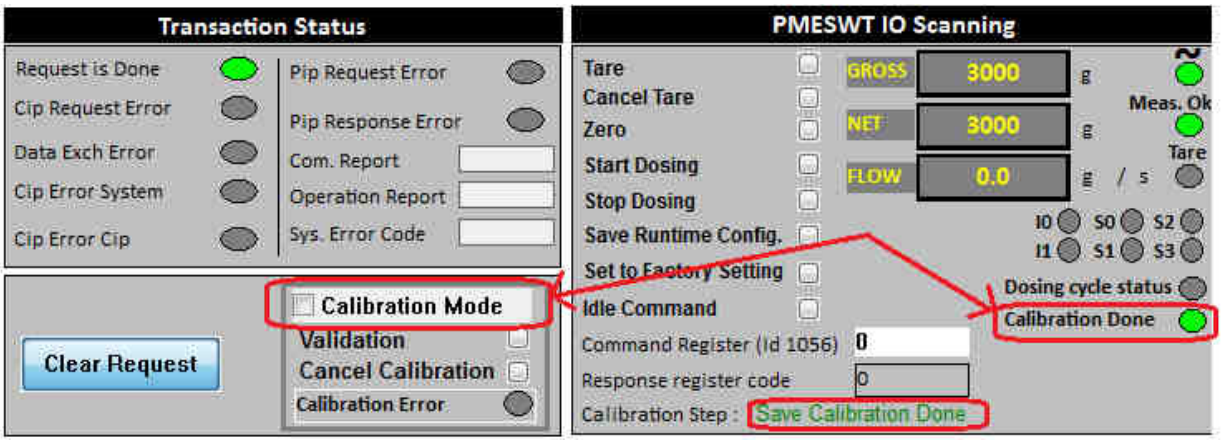
Step #5 – Perform Calibration Load 2 Acquisition

Click on “Validation” button when calibration load 2 is on the scale.



Step #6 – Perform Calibration Load 3 Acquisition

Click on “Validation” button when reference load 3 is on the scale.



Step #7 – Save Runtime calibration in device flash memory

When all physical calibration sequences are successfully done, the DFB send the “Save Calibration” command to automatically save running calibration in flash memory. It ends calibration mode.